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# **LITERATURE ON**

## **TIMBER MEASUREMENT PROBLEMS IN THE DOUGLAS-FIR REGION**

**a bibliography compiled by  
David Bruce**

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**PACIFIC NORTHWEST**

**Forest and Range Experiment Station**

**U.S. Department of Agriculture · Forest Service**

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## FOREWORD

This bibliography on timber measurements was prepared as part of an analysis of measurement problems in the Douglas-fir region of Oregon and Washington. It includes publications on the subject of tree or log measurement in this region with the exception of taper, volume, and yield tables and some standard forestry texts that made no specific reference to regional measurement problems. It also includes many publications that describe measurement systems or problems elsewhere in the United States and Canada and a few foreign publications that cover subjects not located in the American literature. A subject matter index is given on pages 27 and 28.

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## BIBLIOGRAPHY

1. Anonymous.  
1910. Uniform log rule. Forest. Quart. 8: 382-384.
2. 

---

1926. New Japanese import log grading rules. West Coast Lumberman 51(605): 25.
3. 

---

1928. Japanese log grading rules. West Coast Lumberman 54(638): 108.
4. 

---

1928. Northwest loggers endeavoring to evolve a uniform method of grading and scaling logs. West Coast Lumberman 55(653): 19, 39.
5. 

---

1936. Log scaling and grading rules. West Coast Lumberman 63(1): 48, 50, 52.
6. 

---

1946. Objection raised to scaling methods. Timberman 47(8): 114.
7. 

---

1958. Douglas fir appraisal system bases National Forest stumpage prices on product returns, shown here in tabular form. Timberman 59(10): 43-44, 46, 53.
8. 

---

1963. Scaling by weight cuts costs. Forest Ind. 90(4): 70, illus.
9. 

---

1966. Summary: report of timber scaling committee. Silva Fenn. 118, pp. 69-71.
10. 

---

1967. How computers work in timber-based companies. Forest Ind. 94(11): 34-35, illus.
11. 

---

1967. Returns from the sale of Federal timber. Congr. Rec., U.S. Senate, pp. S-9582 to S-9592, July 13; S-9741 to S-9750, July 17.
12. Aho, Paul E.  
1966. Defect estimation for grand fir, Engelmann spruce, Douglas-fir, and western larch in the Blue Mountains of Oregon and Washington. U.S.D.A. Forest Serv. Pacific Northwest Forest & Range Exp. Sta., 26 pp., illus.
13. Alexander, L. B.  
1962. The muddled maze of many methods of measuring timber. Loggers Handb. 22: 8-9, 114-115.

14. Anderson, I. V.  
1961. Ponderosa pine tree grades and how to use them. *Loggers Handb.* 21: 27-28, 106, illus.
15. Andrews, H. J., and Cowlin, R. W.  
1940. Forest resources of the Douglas-fir region. U.S. Dep. Agr. Misc. Pub. 389, 169 pp., illus.
16. Aro, P.  
1966. Timber scaling problems connected with barking. *Forest. Comm. Food Agr. Organ., United Nations, Europe, FAO/ECE/LOG 162:* 503-506.
17. Association of Forest Engineers for the Province of Quebec.  
1928. Studies of the board foot, cubic foot, and cord units of wood measurement. *J. Forest.* 26: 913-928.
18. Avery, T. Eugene.  
1967. Forest measurements. 290 pp., illus. New York, St. Louis [etc.]: McGraw-Hill Book Co.
19. Bair, William M.  
1965. Weight-scaling pine saw-logs in Texas. *South. Lumberman* 210(2618): 27-28, 30, 32, illus.
20. Baker, G. O., Jr.  
1967. Symposium on financial management. V. Forest management records, reports, and controls. *J. Forest.* 65: 479, 482-483.
21. Balko, George A.  
1930. Automatic weighing of wood. *Pulp & Pap. Mag. Can.* 29(6): 183-184, illus.
22. Barger, Roland L.  
1967. Veneer volume and grade recovery from ponderosa pine in the Southwest. U.S.D.A. Forest Serv. Res. Note RM-88, 8 pp., illus.
23. Barnes, G. H.  
1945. Cubic foot scaling and utilization of logging waste. *Timberman* 46(6): 66, 68, 70, 72, illus.
24. Barron, J.  
1966. Wood measurement concepts in Ontario. *Forest. Chron.* 42: 23-28.
25. Barton, W. J.  
1966. Weight vs. volume for use in measuring forest products. In *Measuring the southern forest*, Thomas D. Keister, ed. Louisiana State Univ. 15th Annu. Forest. Symp. Proc., pp. 30-42.
26. Barton, W. W.  
1967. Log rules 1966. Forest control by continuous inventory. U.S.D.A. Forest Serv., Upper Darby, Pa., January, No. 147, 5 pp.

27. Beckwith, A. F.  
1967. An expedient method of scaling. In Wood Measurement Conference proceedings, F. Buckingham, ed. Univ. Toronto Fac. Forest. Tech. Rep. 7: 96-106, illus.
28. \_\_\_\_\_, Dwight, T. W., and Leslie, A. P.  
1964. Comparison of log scaling and timber cruising for determination of wood volumes. Can. Dep. Lands & Forests Res. Rep. 59, 54 pp., illus.
29. Bell, G. E.  
1951. Factors influencing the manufacture of sawlogs into lumber in eastern Canada. Can. Dep. Resources & Develop. Forest Prod. Lab. Div. Bull. 99, 35 pp., illus.
30. Belyea, Harold C.  
1953. Log rules with special reference to the Scribner and the Doyle diameter. South. Lumberman 187: 276, 278, 280, 282, 284, 286.
31. \_\_\_\_\_ and Sheldon, T. Robert.  
1938. Some anomalies in the board foot measurement of logs. J. Forest. 36: 963-969.
32. Bennett, Howard D.  
1967. How do you scale your logs? Wood & Wood Prod. 72(9): 29-30, 70, illus.
33. Bentley, John, Jr.  
1914. A comparative study of two log rules, as applied to timber in central New York. Forest. Quart. 12: 390-394.
34. Besley, Lowell.  
1967. Importance, variation and measurement of density and moisture. In Wood Measurement Conference proceedings, F. Buckingham, ed. Univ. Toronto Fac. Forest. Tech. Rep. 7: 112-142, illus.
35. Bethel, James S., and Harrell, Cleon.  
1957. The application of linear programming to plywood production and distribution. Forest Prod. J. 7(7): 221-227.
36. Blackerby, Louis.  
1938. Principles of log scaling. West Coast Lumberman 65(2): 29, 57, illus.
37. Blades, Carlton J.  
1938. Rule of thumb for converting tree volumes from one log rule to another. J. Forest. 36: 612-614, illus.
38. Bower, David R.  
1961. Are scales better than scale sticks? South. Lumberman 203(2530): 38, illus.
39. \_\_\_\_\_  
1962. Volume-weight relationships for loblolly pine sawlogs. J. Forest. 60: 411-412.

40. Boyce, J. S.  
1932. Decay and other losses in Douglas fir in western Oregon and Washington. U.S. Dep. Agr. Tech. Bull. 286, 60 pp., illus.
41. Boyce, John S., and Waggoner, J. W. Bruce.  
1953. Conk rot of old-growth Douglas-fir in western Oregon. Oreg. Forest Prod. Lab. Bull. 4, 96 pp., illus.
42. Bradner, M., and Fullaway, S. V., Jr.  
1927-28. Size of timber, amount of defect--important factors in lumbering. I-IV. Timberman 29(2): 38-40, 44, 46, 48; 29(3): 40-42, 44, 46; 29(4): 62-63; 29(6): 162, 164, 166, 168, 170, 172, 174.
43. \_\_\_\_\_ and Neff, Philip.  
1926. Log scale versus lumber tally. Timberman 27(9): 46-48, 50-52, illus.
44. Brereton, Bernard.  
1925. The practical lumberman. Ed. 5, 144 pp., illus. Seattle, Wash.
45. \_\_\_\_\_  
1929. Lumber and log exporters' guide. Ed. 3, 111 pp., illus. Seattle, Wash.
46. \_\_\_\_\_  
1935. Explanation of Japanese log scale. Timberman 36(9): 58-59, illus.
47. \_\_\_\_\_  
1936. Buying on one scale; selling on another. Timberman 37(10): 57, illus.
48. \_\_\_\_\_  
1937. Percentage comparisons between Scribner, Spaulding, Doyle and British Columbia "allowance" log scales and Brereton scale. Timberman 38(5): 24, 26, illus.
49. Briegleb, Philip A.  
1944. Sample scaling for West Coast logs. Timberman 45(4): 98, 100-102, illus.
50. Brown, G. S.  
1957. Log measurement in South East Asia and the Pacific. Malayan Forest. 20(2): 73-79.
51. Bruce, Donald.  
1925. A formula for the Scribner rule. J. Forest. 23: 432-433.
52. \_\_\_\_\_  
1925. Need for a new log rule. I. Timberman 27(2): 214, 216-218, 220, illus.



53. Buckingham, F. M.  
1961. Wood measurement--general. Pulp & Pap. Mag. Can. 62(5): 143-145.
54. Bureau of Corporations.  
1913. Report of the Commissioner of Corporations on the lumber industry. Pt. I. U.S. Dep. Com. & Labor. 301 pp.
55. Calvert, W. W.  
1963. Factors affecting overrun and its significance. Can. Lumberman 83(10): 44-46, illus.
56. \_\_\_\_\_ and Johnston, J. S.  
1967. Test shows lumber, chip recovery higher on band than circular saws. Can. Forest Ind. 87(5): 68-69, 71-73, 75, illus.
57. Campbell, Robert A.  
1960. Does site affect grade yield? Soc. Amer. Forest. Proc. 1959: 50-53, illus.
58. \_\_\_\_\_  
1962. Overruns--southern pine logs. U.S.D.A. Forest Serv. Southeast. Forest Exp. Sta. Res. Notes 183, 2 pp.
59. Cary, Austin.  
1932. Woodsmans manual. Ed. 4, 366 pp., illus. Cambridge: Harvard Univ. Press.
60. Chapman, H. H.  
1942. The International log rule for  $\frac{1}{4}$ -inch kerf. Can it replace the Doyle rule? J. Forest. 40: 224-234, illus.
61. Church, Thomas W., Jr.  
1966. The cost of scaling & grading hardwood sawlogs. U.S.D.A. Forest Serv. Res. Pap. NE-49, 21 pp., illus.
62. Clark, Judson F.  
1906. The measurement of saw logs. Forest. Quart. 4: 79-93.
63. Clarke, E. H.  
1957. Shingle recovery from No. 2 redcedar logs. U.S.D.A. Forest Serv. Pacific Northwest Forest & Range Exp. Sta. Office Rep., 2 pp.
64. \_\_\_\_\_ and Knauss, A. C.  
1957. Veneer recovery from Douglas-fir logs. U.S.D.A. Forest Serv. Pacific Northwest Forest & Range Exp. Sta. Res. Pap. 23, 13 pp, illus.
65. Columbia River Log Scaling and Grading Bureau.  
1965. Official log scaling and grading rules. 43 pp. Portland, Oreg.
66. Coman, Edwin T., Jr., and Gibbs, Helen M.  
1949. Time, tide and timber. 480 pp., illus. Stanford, Calif.: Stanford Univ. Press.

67. Compton, Wilson.  
1916. The organization of the lumber industry. 153 pp., illus.  
Chicago: American Lumberman.
68. Comptroller General of the United States.  
1966. Report to the Congress of the United States. Need for effective controls over timber-cutting practices in Pacific Northwest region. Sept., 23 pp.
69. \_\_\_\_\_  
1966. Report to the Congress of the United States. Dec., 84 pp.
70. Conklin, Robert P.  
1965. The art of logging. Soc. Amer. Forest. Proc. 1964: 180-182.
71. Cour, Robert M.  
1955. The plywood age. A history of the fir plywood industry's first fifty years. 171 pp., illus. Portland, Oreg.: Binfords and Mort.
72. Csizmazia, J., McIntosh, J. A., McBride, C. F., and Gunn, D. C.  
1966. Analytical procedures for developing log and tree quality classification systems. Can. Dep. Forest. Pub. 1144, 31 pp., illus.
73. Cunia, T., and Simard, H.  
1967. Tree-length logging and wood measurement by sampling. In Wood Measurement Conference proceedings, F. Buckingham, ed. Univ. Toronto Fac. Forest. Tech. Rep. 7: 47-72.
74. Cuno, John B.  
1939. Production of loblolly pine pulpwood in the Mid-Atlantic region. I-II. South. Pulp and Pap. J. 1(4): 13-16, illus; 1(6): 9-15, 26, illus.
75. Curtis, Floyd H.  
1962. Linear programming the management of a forest property. J. Forest. 60: 611-616, illus.
76. \_\_\_\_\_  
1966. Tree weight equations--their development and use in forest management planning. Soc. Amer. Forest. Proc. 1965: 189-191, illus.
77. Dane, C. W.  
1967. Operations research: practice and potential for forest products industries. Forest Prod. J. 17(1): 13-17, illus.
78. Daniels, A. L.  
1905. The measurement of saw logs and round timber. Forest. Quart. 3: 339-345, illus.

79. Davis, Kenneth P., Briegleb, Philip A., Fedkiw, John, and Grosenbaugh, Lewis R.  
1962. Determination of allowable annual timber cut on forty-two western National Forests. U.S.D.A. Forest Serv., Washington, D.C., Board Rev. Rep. M-1299, 38 pp. plus 2 tables.
80. Davis, Vern.  
1966. Scaling small logs. In Loggers handbook, v. 26, sect. II, 56th sess. Pacific Logging Congr. Proc. 1965: 67-68.
81. Day, Besse B.  
1937. A suggested method for allocating logging costs to log sizes. J. Forest. 35: 69-71, illus.
82. Defebaugh, James Elliott.  
1906-07. History of the lumber industry of America. 2 v. Chicago: The American Lumberman.
83. Dilworth, J. R.  
1964. Log scaling and timber cruising. 446 pp., illus. Corvallis, Oreg.: OSU Book Stores, Inc.
84. Dobie, J.  
1964. Log taper related to lumber production. Brit. Columbia Lumberman 48(5): 80, 84-85, illus.
85. \_\_\_\_\_  
1965. Factors influencing the weight of logs. Brit. Columbia Lumberman 49(9): 36-37, 42, 44, 46, illus.
86. \_\_\_\_\_  
1967. Chipper headrig productivity cuts small log milling costs. Forest Ind. 94(9): 82-85, illus.
87. \_\_\_\_\_ and McBride, C. F.  
1964. How B.C. mills get value from lodgepole pine. Can. Forest Ind. 84(10): 62-67, illus.
88. \_\_\_\_\_ and Parry, H. W.  
1967. Factors affecting the yield of pulp chips from sawmills in the B.C. interior. Brit. Columbia Lumberman 51(11): 48-51, illus.
89. \_\_\_\_\_, Sturgeon, W. J., and Wright, D. M.  
1967. An analysis of the production characteristics of chipper head-rigs, scrag mills and log-gang mills. Dep. Forest. and Rural Develop., Vancouver, B.C., Forest Prod. Lab. Inform. Rep. VP-X-21, 10 pp. plus 10 tables.
90. Eggen, Roy W.  
1967. Weight measurement of pulpwood. In Wood Measurement Conference proceedings, F. Buckingham, ed. Univ. Toronto Fac. Forest. Tech. Rep. 7: 157-175, illus.

91. Englerth, G. H.  
1942. Decay of western hemlock in western Oregon and Washington. Yale Univ. Sch. Forest. Bull. 50, 53 pp., illus.
92. Englerth, George H.  
1966. Framework of qualitative relationships in wood utilization. U.S.D.A. Forest Serv. Res. Pap. FPL 45, 16 pp., illus.
93. Fasick, C. A., and Guttenberg, Sam.  
1966. Veneer bolts, saw logs, and pulpwood. Forest Prod. J. 16(12): 56-58, illus.
94. Faustino, D. G., and Virtucio, F. D.  
1966. Determination of wood waste in the sawmills. Forest. Leaves 17(2 & 3): 79-84, illus.
95. Ffolliott, Peter F., and Barger, Roland L.  
1965. A method of evaluating multiproduct potential in standing timber. U.S.D.A. Forest Serv. Res. Pap. RM-15, 24 pp., illus.
96. \_\_\_\_\_ and Barger, Roland L.  
1967. Occurrence of stem features affecting quality in cutover southwestern ponderosa pine. U.S.D.A. Forest Serv. Res. Pap. RM-28, 11 pp., illus.
97. Fisher, W. Halder.  
1964. Analysis of the relationship of softwood log exports to the economy of the State of Washington. 66 pp. Battelle Memorial Inst., Columbus, Ohio.
98. Flann, I. B., and Petro, F. J.  
1964. Lumber recovery on a tree-length jack pine operation. Can. Forest Prod. Res. Br. Contrib. P-67, 7 pp. (unnumbered)
99. Fox, William F.  
1902. A history of the lumber industry in the State of New York. U.S. Dep. Agr. Bur. Forest. Bull. 34, 59 pp., illus.
100. Fraser, A. R., and Highsted, C. J.  
1966. Current scaling practices and developments in British Columbia. Forest. Chron. 42: 18-22.
101. Freeman, E. A.  
1962. Weight-scaling sawlog volume by the truckload. Forest Prod. J. 12(10): 473-475, illus.
102. Fritz, Emanuel.  
1936. Log scaling practices in the California redwood region. Timberman 37(8): 14-15, 18, illus.
103. Gaines, Edward M.  
1965. Log and tree quality concepts in the computer age. Soc. Amer. Forest. Proc. 1964: 162-165.

104. Gedney, D. R.  
1956. Annual cut and timber products output in the Pacific Northwest in 1952. U.S.D.A. Forest Serv. Pacific Northwest Forest & Range Exp. Sta. Forest Survey Rep. 126, 29 pp., illus.
105. Gedney, Donald R., Newport, Carl A., and Hair, Dwight.  
1966. Prospective economic developments based on the timber resources of the Pacific Northwest. Pacific Northwest Economic Base Study for Power Markets, v. II, pt. 6. Forest Ind., 174 pp., illus. (Cooperatively published with Bonneville Power Administration)
106. Gevorkiantz, S. R.  
1950. Converting International  $\frac{1}{4}$ -inch gross sawlog scale to peeled total volume in cubic feet. U.S.D.A. Forest Serv. Lake States Forest Exp. Sta. Tech. Notes 329, 1 p.
107. \_\_\_\_\_  
1952. A mill-scale log rule. U.S.D.A. Forest Serv. Lake States Forest Exp. Sta. Tech. Notes 375, 2 pp.
108. Gill, Keith.  
1966. Regional problems of complete utilization in British Columbia. In Loggers handbook, v. 26, sect. II, 56th sess. Pacific Logging Congr. Proc. 1965: 30-32.
109. Girard, James W., and Gevorkiantz, Sieren R.  
1939. Timber cruising. U.S.D.A. Forest Serv. 160 pp., illus.
110. Gosselin, R.  
1949. The length of veneer in a log. CR 28 Assemb. Ann. Ass. Ingen. For. Quebec: 53-58.
111. Grantham, J. B.  
1953. The relationship of lumber recovery to log quality in 29 old-growth Douglas-fir trees of the Oregon Coast Range. Oreg. Forest Prod. Lab. Rep. G1, 13 pp., illus.
112. Grantham, John B., and Hunt, Douglas L.  
1963. Lumber yield and log values of Shasta red fir. U.S.D.A. Forest Serv. Res. Pap. PNW-2, 30 pp., illus.
113. Graves, Henry S.  
1905. Methods of scaling logs. Forest. Quart. 3: 245-254.
114. \_\_\_\_\_  
1907. Forest mensuration. 458 pp., illus. New York & London: John Wiley & Sons.
115. \_\_\_\_\_  
1909. Recent log rules. Forest. Quart. 7: 144-146.
116. \_\_\_\_\_ and Ziegler, E. A.  
1910. The woodsman's handbook (revised and enlarged). [Reprinted 1912.] U.S. Dep. Agr. Forest. Serv. Bull. 36, 208 pp., illus.

117. Greeley, William B.  
1951. Forests and men. 255 pp. Garden City, N.Y.: Doubleday and Co., Inc.
118. Grosenbaugh, L. R.  
1954. New tree-measurement concepts: height accumulation, giant tree, taper and shape. U.S.D.A. Forest Serv. South. Forest Exp Sta. Occas. Pap. 134, 32 pp.
119. \_\_\_\_\_  
1963. Optical dendrometers for out-of-reach diameters: a conspectus and some new theory. Forest Sci. Monogr. 4, 47 pp., illus.
120. \_\_\_\_\_  
1964. Some suggestions for better sample-tree-measurement. Soc. Amer. Forest. Proc. 1963: 36-42, illus.
121. \_\_\_\_\_  
1967. Choosing units of measure. In Proceedings of a Conference on Young-Growth Forest Management in California, March 1-2-3, 1967, Berkeley, Calif., pp. 143-146. Univ. Calif. Agr. Ext. Serv.
122. Guernsey, F. W.  
1953. Utilization of sawmill residue in the southern coast region of British Columbia. Can. Dep. Resources and Develop. Forest Prod. Lab. Div. Bull. 109, 31 pp., illus.
123. Gunn, D. C., Bailey, G. R., and McIntosh, J. A.  
1966. Variations in log-scale deductions for Douglas fir in the B.C. interior. Brit. Columbia Lumberman 50(4): 40, 42, 44, 46, illus.
124. Guttenberg, Sam.  
1967. Economic implications of weight scaling. South. Lumberman 214(2663): 33-34, 36, illus.
125. \_\_\_\_\_  
1967. Veneer yields from southern pine bolts. Forest Prod. J. 17(12): 30-32, illus.
126. \_\_\_\_\_, Fassnacht, Donald, and Siegel, William C.  
1960. Weight-scaling southern pine saw logs. U.S.D.A. Forest Serv. South. Forest Exp. Sta. Occas. Pap. 177, 6 pp., illus.
127. Hall, O. F.  
[n.d.] Marketing pulpwood on a weight basis. Minn. Farm and Home Sci. 12(2): 4, 15, 17.
128. \_\_\_\_\_  
1967. Symposium on financial management. III. New tools for planning and decision making. J. Forest. 65: 467-473.

129. Hallock, Hiram.  
1964. Kerf width and lumber yield. Forest Prod. J. 14(2): 80-85, illus.
130. Hamilton, Henry R.  
1964. Attacking a paper industry problem by simulation. TAPPI 47: 678-683, illus.
131. Hampton, John C.  
1964. Making the transition from board foot to cubic foot measure. In Loggers handbook, v. 24, sect. II, 54th sess. Pacific Logging Congr. Proc. 1963: 75-77.
132. Hardy, Steven S., and Weiland, George W. III.  
1964. Weight as a basis for the purchase of pulpwood in Maine. Maine Agr. Exp. Sta. Tech. Ser. Bull. 14, 63 pp., illus.
133. Harker, M. G.  
1967. Forestry in Norway. Forestry 40: 70-82.
134. Hasel, A. A.  
1946. Logging cost as related to tree size and intensity of cutting in ponderosa pine. J. Forest. 44: 552-560, illus.
135. Henley, John W., and Hoopes, Jill M.  
1967. An electronic computer program for calculating saw log lumber recovery and value. U.S.D.A. Forest Serv. Pacific Northwest Forest & Range Exp. Sta., 47 pp., illus.
136. \_\_\_\_\_, Woodfin, Richard O., Jr., and Haskell, Henry H.  
1963. Recommended veneer grades for the development of hardwood veneer log grades. U.S.D.A. Forest Serv. Res. Pap. FPL 9, 12 pp., illus.
137. Herrick, Owen W., and Christensen, W. W.  
1967. A cost analysis of chip manufacture at hardwood sawmills. U.S.D.A. Forest Serv. Res. Pap. NE-69, 14 pp.
138. Hessler, H. E.  
1931. Pond values of various sizes and grades of Douglas fir and hemlock logs. Various paging, illus. Seattle: Hessler & Co.
139. Hewson, Thomas A.  
1960. Simulation of pulpwood inventory dynamics in the operation of an integrated pulp and paper mill. TAPPI 43: 518-527, illus.
140. Hide, R. H.  
1950. Squaring the circle or the forester and his escape from  $\pi$  [3.14159265358979328846264338327950.....]. Empire Forest. Rev. 29: 146-151.

141. Hinds, Thomas E., and Hawksworth, Frank G.  
1966. Indicators and associated decay of Engelmann spruce in Colorado.  
U.S.D.A. Forest Serv. Res. Pap. RM-25, 15 pp., illus.
142. Howlett, L. E.  
1967. International basis for uniform measurement. Science  
158(3797): 72-74.
143. Hoyer, G. E.  
1965. Variable log-length and traditional scaling practice; two  
problems in applying Scribner volume to second growth stands.  
State Wash. Dep. Nat. Resources Res. Manage. Rep. 1, 16 pp.,  
illus.
144. Huey, Ben M.  
1967. Weight-scaling gains in the Rockies. Forest Ind. 94(3): 70-71,  
illus.
145. Huntoon, R. D.  
1965. Status of the national standards for physical measurement.  
Science 150(3693): 169-178.
146. \_\_\_\_\_  
1967. Concept of a national measurement system. Science 158(3797):  
69-71, illus.
147. Institute of Forest Products.  
1957. Conversion factors for Pacific Northwest forest products.  
Univ. Wash., Seattle. 28 pp.
148. International Institute of Agriculture.  
1928. International inquiry on the standardization of timber measure-  
ments and on different methods of sale of timber. Bureau of  
Sylviculture, Rome. 48 pp.
149. Jenkins, J. H.  
1964. Lumber measurement of the future--inch or metric? Brit.  
Columbia Lumberman 48(2): 64, 66, 68.
150. Johnson, Floyd A., Ruth, Robert H., and Madison, Robert W.  
1963. Sample scaling for timber sales. J. Forest. 61: 360-364, illus.
151. Karr, E. I.  
1915. Uniformity in log scaling. Timberman 16(11): 47.
152. \_\_\_\_\_  
1927. Log scaling in the Douglas fir region. Ed. 3, 48 pp., illus.  
Portland, Oreg.: The Timberman.
153. Keepers, Cecil H.  
1945. A new method of measuring the actual volume of wood in stacks.  
J. Forest. 43: 16-22, illus.



154. Keezer, Dexter M.  
1941. The Douglas fir lumber industry. Inter-departmental study for the Bureau of Research and Statistics of the Advisory Commission to the Council of National Defense. 98 pp., illus. (Supplement, 80 pp., illus.)
155. Kellogg, R. S.  
1925. What is a cord? J. Forest. 23: 608-610.
156. Kemp, Paul D.  
1957. U.S. Forest Service board-foot log scaling standards. U.S.D.A. Forest Serv. Intermountain Forest & Range Exp. Sta. 12 pp., illus.
157. Kempston, M. J.  
1966. Sample scaling sawlogs. Brit. Columbia Lumberman 50(1): 46, 48, 50, 52, illus.
158. Ker, J. W.  
1961. Log scale as related to lumber recovery. Brit. Columbia Lumberman 45(11): 10-12, 14, 16, 20, illus.
159. \_\_\_\_\_  
1961. NILA log study. Brit. Columbia Lumberman 45(5): 14-17.
160. \_\_\_\_\_  
1962. The theory and practice of estimating the cubic content of logs. Forest. Chron. 38: 168-172.
161. \_\_\_\_\_  
1966. The measurement of forest products in Canada: past, present and future historical and legislative background. Forest. Chron. 42: 29-38.
162. Kilyakov, A. M.  
1962. [The accuracy of determining the diameter of logs by means of volume-measuring instruments of the integrating type for longitudinal flow of the logs.] Izv. Vyssh. Ucheb. Zavedenii Les. ZH. 5(2): 152-160. (U.S. Dep. Com. Transl. 66-51101: 22-31.)
163. Kimmey, J. W., and Furniss, R. L.  
1943. Deterioration of fire-killed Douglas-fir. U.S. Dep. Agr. Tech. Bull. 851, 61 pp., illus.
164. Kimmey, James W.  
1950. Cull factors for forest-tree species in northwestern California. U.S.D.A. Forest Serv. Calif. Forest & Range Exp. Sta. Forest Surv. Release 7, 30 pp., illus.
165. Kingsley, Neal P., and Dickson, David R.  
1967. Pulpwood production in the Northeast--1965. U.S.D.A. Forest Serv. Resource Bull. NE-6, 36 pp., illus.

166. Kirkland, Burt P., and Brandstrom, Axel J. F.  
1936. Selective timber management in the Douglas fir region. Washington, D.C.: Charles Lathrop Pack Found. 122 pp., illus.
167. Knauss, A. C.  
1953. Utilization of mill residues in the timber products mills in the Lakeview Working Circle. U.S.D.A. Forest Serv. Pacific Northwest Forest & Range Exp. Sta. Res. Pap. 6, 14 pp.
168. Knouf, C. E.  
1927. Basic principles in scaling pine. Timberman 29(1): 64, 66, 68, illus.
169. Kotok, E. S.  
1967. Tree characteristics influence 2 X 4 stud yield of lodgepole pine. U.S.D.A. Forest Serv. Res. Note INT-63, 8 pp., illus.
170. Krahmer, Robert L.  
1966. Variation of specific gravity in western hemlock trees. TAPPI 49: 227-229, illus.
171. Kramer, Paul R.  
1957. Yield of sawmill residue pine pulp chips by sawlog size. Pap. Trade J. 141(8): 44-45.
172. Lamb, F. M.  
1966. Wood residues in Canada and their utilization. Forest Prod. J. 16(7): 19-23, illus.
173. Lane, Paul H.  
1963. Evaluating log and tree quality for wood products. Forest Prod. J. 13(3): 89-93, illus.
174. \_\_\_\_\_  
1964. Grades for inland Douglas-fir saw logs in standing trees. U.S.D.A. Forest Serv. Res. Note PNW-19, 5 pp.
175. Lange, Keith D.  
1960. Timber sales by weight. Forest Farmer 20(2): 10-11, illus.
176. \_\_\_\_\_  
1962. Selling stumpage by weight in the South. South. Lumberman 204(2540): 28-32, illus.
177. Larson, Kenneth R.  
1967. You, too, can use sample scaling. Loggers Handb. 27: 35-38, 164, 167, 168, illus.
178. Leahy, William E.  
1942. Log scaling in the Columbia River District. West Coast Lumberman 69(1): 64.
179. Lexen, Bert.  
1942. Sale of stumpage on the basis of tree measurement. J. Forest. 40: 845-853, illus.

180. Lexen, Bert.  
1947. The determination of net volume by sample-tree measuring.  
J. Forest. 45: 21-32, illus.
181. Lindgren, R. M.  
1952. Deterioration of southern pine pulpwood during storage.  
Forest Prod. Res. Soc. Proc. 5: 169-181.
182. Lockard, C. R.  
1961. A log and tree grade syllabus. J. Forest. 59: 677-678.
183. \_\_\_\_\_  
1964. Timber quality evaluation and the society. J. Forest. 62:  
132-133.
184. Lodewick, J. Elton.  
1941. West coast log values. I. Douglas-fir from the Oregon Cascades.  
U.S.D.A. Forest Serv. Pacific Northwest Forest & Range Exp.  
Sta. Prod. Pap. 3, 40 pp., illus.
185. \_\_\_\_\_  
1943. West coast log values. II. Western hemlock from the Washing-  
ton Cascades. U.S.D.A. Forest Serv. Pacific Northwest  
Forest & Range Exp. Sta. Prod. Pap. 4, 28 pp., illus.
186. \_\_\_\_\_  
1944. How much is a cord of pulpwood? Pacific Pulp & Pap. Ind.  
18(10): 46-51, illus.
187. Louder, L. F.  
1961. Measurement of wood on a tree-length operation. Pulp & Pap.  
Mag. Can. 62(5): 145, 148.
188. Lynch, Donald W.  
1957. Truck load sample scaling to adjust company scale. U.S.D.A.  
Forest Serv. Intermountain Forest & Range Exp. Sta. Res.  
Note 48, 7 pp.
189. McBride, C. F.  
1949. Lumber recovery from Douglas fir logs in British Columbia.  
Forest Prod. Res. Soc. Proc. 3: 284-291.
190. \_\_\_\_\_  
1951. Lumber recovery from second-growth western hemlock. Brit.  
Columbia Lumberman 35(6): 63, 140, 142, illus.
191. McDonald, Gordon D.  
1964. Making the transition from board foot to cubic foot measure.  
In Loggers handbook, v. 24, sect. II, 54th sess. Pacific  
Logging Congr. Proc. 1963: 73-74.
192. McIntyre, R. W.  
1932. Facts on scaling, grading, cutting and branding logs. 29 pp.  
Bellingham, Wash.

193. McIntyre, R. W.  
1935. Problems of the log scaler. *Timberman* 36(2): 21-23, illus.
194. \_\_\_\_\_  
[n.d.] Log scaling and grading rules defined and illustrated. 62 pp.  
Independent Log Scaling Service, Bellingham, Wash.
195. \_\_\_\_\_, Brereton, Bernard, Fritz, Emanuel, and others.  
1936. Log scaling. 157 pp., illus. Portland, Oreg.: *The Timberman*.
196. McKenzie, H. E.  
1915. A discussion of log rules. *Calif. State Board Forest. Bull.* 5,  
56 pp.
197. McKinsey & Company.  
1955. Evaluation of Forest Service timber sales activities. Various  
paging, illus. U.S.D.A. Forest Serv., Washington, D.C.
198. Martens, David G.  
1967. How lumber price changes affect sawlog values. U.S.D.A.  
Forest Serv. Res. Pap. NE-89, 38 pp., illus.
199. Martin, W. H.  
1955. Truck wood measurement at the C.I.P. Company's Hawkesbury  
mill. *Pulp & Pap. Mag. Can.* 56(2): 72-74, 77, 79, 81-82.
200. \_\_\_\_\_  
1961. The measurement of regular length wood. *Pulp & Pap. Mag.*  
*Can.* 62(5): 150-152.
201. \_\_\_\_\_ and Simard, H.  
1959. Weight as a basis for wood measurement. *Pulp & Pap. Mag. Can.*  
60(5): 149-155, 168.
202. Mason, Earl G.  
1930. The conversion of log scale to cord material. *West Coast*  
*Lumberman* 57(11): 16.
203. Matson, E. E.  
1952. Lumber grade recovery from Oregon coast type Douglas-fir.  
U.S.D.A. Forest Serv. Pacific Northwest Forest & Range  
Exp. Sta. Res. Pap. 3, 10 pp, illus.
204. \_\_\_\_\_  
1956. Lumber grades from old-growth Douglas-fir sawmill logs.  
U.S.D.A. Forest Serv. Pacific Northwest Forest & Range  
Exp. Sta. Res. Note 125, 2 pp. plus tables, illus.
205. \_\_\_\_\_  
1956. Young DF makes good lumber. *Lumberman* 83(2): 84, 114.
206. Matthews, Donald Maxwell.  
1942. Cost control in the logging industry. 374 pp., illus.  
New York & London: McGraw-Hill Book Co., Inc.

207. Mead, Walter J.  
1964. Mergers and economic concentration in the Douglas-fir lumber industry. U.S.D.A. Forest Serv. Res. Pap. PNW-9, 81 pp., illus.
208. \_\_\_\_\_  
1966. Competition and oligopsony in the Douglas fir lumber industry. 276 pp. Berkeley and Los Angeles: Univ. Calif. Press.
209. Michelsén, P., and Kallio, H.  
1965. [The use of the immersion method for volume calculations of timber bundles.] Suomen Uittajainyhdist. Vuosikirja, pp. 70-73. [English summary, p. 73.]
210. Miller, R. H.  
1941. Measuring green southern yellow pine pulpwood by weight or cord. South. Pulp Pap. J. 4(1): 10-1, 19. Also in Pap. Trade J. 113. July.
211. Minore, Don, and Gedney, Donald R.  
1960. Merchantable height of trees in Oregon--a comparison of current logging practice and volume table specifications. U.S.D.A. Forest Serv. Pacific Northwest Forest & Range Exp. Sta. Res. Note 184, 5 pp., illus.
212. Mlodziansky, A. K.  
1898. Measuring the forest crop. U.S. Dep. Agr. Div. Forest. Bull. 20, 71 pp., illus.
213. Morawsky, J. R.  
1967. Assessment of cull. In Wood Measurement Conference proceedings, F. Buckingham, ed. Univ. Toronto Fac. Forest. Tech. Rep. 7: 24-28.
214. Morgan, H. E., Jr.  
1966. A look at timber utilization trends in the Northwest. Amer. Pulpwood Ass. Tech. Pap. 66-14 (5.0): 9-10, illus.
215. Morriss, Donald J.  
1960. Net tree measurement. J. Forest. 58: 15-23, illus.
216. \_\_\_\_\_  
1962. Trends in timber management planning on the National Forests. J. Forest. 60: 301-305.
217. Morse, Roy F.  
1928. Log scaling and grading. Timberman 30(1): 58, 60.
218. Mueller, Lincoln A., and Kovner, J. L.  
1967. Lumber production from selected Black Hills ponderosa pine. U.S.D.A. Forest Serv. Res. Pap. RM-31, 20 pp., illus.

219. Munger, Thornton T.  
1929. Some advantages of cubic foot unit as a measurement of logs. West Coast Lumberman 56(1): 60.
220. Murray, Thos. J., & Associates.  
1966. Oregon's timber resource. 53 pp., illus. (Prepared for Oregon Department of Commerce, Division of Planning and Development.) Portland, Oreg.
221. Navon, D. I.  
1967. Symposium on financial management. IV. Computer-oriented systems for wildland management. J. Forest. 65: 473-479, illus.
222. Newport, Carl A.  
1960. A basic approach to timber quality measurement. Soc. Amer. Forest. Proc. 1959: 47-50.
223. \_\_\_\_\_ and Leach, Joe.  
1959. A method for the application of change-in-grade factors to individual logs...an IBM 650 program. U.S.D.A. Forest Serv. Pacific Southwest Forest & Range Exp. Sta. Tech. Pap. 41, 9 pp.
224. \_\_\_\_\_, Lockard, C. R., and Vaughan, C. L.  
1958. Log and tree grading as a means of measuring quality. 31 pp. Rep. of the Working Group (approved by the Nat. Log Grade Comm., Madison, Wis.) U.S.D.A. Forest Serv., Washington, D.C.
225. Nutter, G. W.  
1962. Day work vs. busheling. Loggers Handb. 22: 21-22.
226. Nylinder, Per.  
1967. Non-destructive field sampling systems for determining the wood density of standing timber over large areas, variation within and between species, and the influence of environmental and other measurable factors on wood density. Dep. Forest Prod. Royal Coll. Forest., Stockholm, Res. Notes Nr R 56, 19 pp., illus.
227. \_\_\_\_\_  
1967. Weight measurement of pulpwood. In Wood Measurement Conference proceedings, F. Buckingham, ed. Univ. Toronto Fac. Forest. Tech. Rep. 7: 176-203, illus. Also in Dep. Forest Prod. Royal Coll. Forest., Stockholm, Res. Notes Nr R 57, 25 pp., illus.
228. \_\_\_\_\_  
1967. Wood measurement in Scandinavia. In Wood Measurement Conference proceedings, F. Buckingham, ed. Univ. Toronto Fac. Forest. Tech. Rep. 7: 29-44. Also in Dep. Forest Prod. Royal Coll. Forest., Stockholm, Res. Notes Nr R 58, various paging, illus.

229. Ontario Paper Co.  
1946. Pulpwood volume measured by water displacement. Pap. Ind. & Pap. World 28: 526-527, illus.
230. Orchard, C. D.  
1953. Cubic scale in British Columbia. Brit. Columbia Forest Serv. Forest Topics 4, 13 pp.
231. O'Regan, William G., and Savin, N. E.  
1964. On log-grading and timber appraisal. Forest Sci. 10: 239-240.
232. Page, Rufus H., and Bois, Paul J.  
1961. Buying and selling southern yellow pine saw logs by weight. Georgia Forest Res. Counc. Rep. 7, 9 pp., illus.
233. Paine, D. W. M.  
1963. Uses of log grading rules in assessment. Forests Comm., Victoria, Forest. Tech. Pap. 11: 9-17.
234. Paterson, D. N.  
1965. The determination of log volume errors due to methods of measurement and other defects for four important indigenous Kenyan tree species. East Afr. Agr. Forest. J. 31(2): 125-131, illus.
235. \_\_\_\_\_  
1966. A quality assessment of the exotic softwoods of East Africa for sawn timber. Commonwealth Forest. Rev. 45(3), No. 125: 212-223, illus.
236. Paxson, Glenn S., and Spaulding, Loran L.  
1944. Log scale measurement vs. weight as a measure for load regulation. Oreg. State Highway Dep. Tech. Rep. 44-4, 26 pp., illus.
237. Pearce, J. Kenneth.  
1944. Now is the time...to adopt the cubic foot rule for scaling small pulp timber. Timberman 45(7): 98.
238. Pearce, P. H., and Sydneysmith, Sam.  
1966. Method for allocating logs among several utilization processes. Forest Prod. J. 16(9): 87-98, illus.
239. Peck, E. C.  
1959. The sap or moisture in wood. Forest Prod. Lab. Rep. 768 (rev.), 5 pp., 4 tables, illus.
240. Perry, Thomas D.  
1942. Modern plywood. 366 pp., illus. New York and Chicago: Pitman Publishing Corp.
241. Puget Sound Log Scaling and Grading Bureau.  
[n.d.] Sorensen log rule. (Unnumbered pages.) Seattle, Wash.

242. Puget Sound, Grays Harbor, Southern Oregon, and Northern California Scaling and Grading Bureaus.  
1966. Official log scaling and grading rules. 41 pp.
243. Ramdial, Bal Sieu.  
1963. Graphic determination of the cubic volume of a felled tree. J. Forest. 61: 220-222, illus. Also in Pulp & Paper Mag. Can. 63(3): 110, 112, 114. 1962.
244. Rapraeger, E. F.  
1932. Cubic measurement of pulp logs. Ed. 2, 5 pp. U.S.D.A. Forest Serv. Pacific Northwest Forest Exp. Sta.
245. \_\_\_\_\_  
1932-33. The influence of ponderosa pine log size and quality on overrun, lumber grades and conversion values. West Coast Lumberman 59(8): 12-14, 20; 59(10): 8-10; 60(5): 18-20.
246. \_\_\_\_\_  
1932. The iniquitous board foot. Timberman 33(5): 18-19, 28, 30, illus.
247. \_\_\_\_\_  
1932. Tree breakage and felling in the Douglas fir region. Timberman 33(11): 9-13, 24, illus.
248. \_\_\_\_\_  
1933. Log scaling and grading practice in the Douglas fir region. U.S.D.A. Forest Serv. Pacific Northwest Forest Exp. Sta. 43 pp., illus.
249. \_\_\_\_\_  
1938. Isn't cubic measure logical? Univ. Wash. Forest Club Quart. XI(2), 1 p.
250. \_\_\_\_\_  
1940. The cubic foot as a national log-scaling standard. U.S.D.A. Forest Serv. North. Rocky Mountain Forest & Range Exp. Sta. 40 pp., illus.
251. Raymond, F.  
1967. Tree-length volume tables. In Wood Measurement Conference proceedings, F. Buckingham, ed. Univ. Toronto Fac. Forest. Tech. Rep. 7: 73-80.
252. Reed, Starr W.  
1964. Making the transition from board foot to cubic foot measure. In Loggers handbook, v. 24, sect. II, 54th sess. Pacific Logging Congr. Proc. 1963: 71-73.
253. Reynolds, R. R.  
1937. Factors for converting log and tree volumes or values from one common scale to another. U.S.D.A. Forest Serv. South. Forest Exp. Sta. Occas. Pap. 68, 2pp. plus 2 tables.



254. Robinson, J. M.  
1967. The history of wood measurement in Canada. Forest Manage. Res. Serv. Inst. Ottawa, Can. Intern. Rep. FM R-7, 185 pp.
255. Rodenbach, Richard C.  
1966. Southern yellow pine log overruns. U.S.D.A. Forest Serv. Res. Note SE-56, 2 pp.
256. Rothery, Julian E.  
1945. Some aspects of appraising standing timber. J. Forest. 43: 490-498.
257. Row, Clark, and Fasick, Clyde.  
1966. Weight-scaling tables by electronic computer. Forest Prod. J. 16(8): 41-45.
258. \_\_\_\_\_, Fasick, Clyde, and Guttenberg, Sam.  
1965. Improving sawmill profits through operations research. U.S.D.A. Forest Serv. Res. Pap. SO-20, 26 pp., illus.
259. \_\_\_\_\_ and Guttenberg, Sam.  
1966. Determining weight-volume relationships for saw logs. Forest Prod. J. 16(5): 39-47, illus.
260. Roy, Henri.  
1938. Log scaling in Quebec. J. Forest. 36: 969-975. (Comments by W. G. Wright, pp. 976-978.)
261. Schenck, C. A.  
1905. Forest mensuration. 71 pp. Sewanee, Tenn.: Univ. Press.
262. Schultheis, W. C.  
1935. Purpose and policy of Pacific Log Scaling Bureau. West Coast Lumberman 62(11): 16.
263. Schumacher, F. X.  
1946. Stacked and solid volume of southeastern pulpwood. J. Forest. 44: 579-582, illus.
264. \_\_\_\_\_  
1946. Volume-weight ratios of pine logs in the Virginia-North Carolina coastal plain. J. Forest. 44: 583-586, illus.
265. \_\_\_\_\_ and Jones, W. C., Jr.  
1940. Empirical log rules and the allocation of sawing time to log size. J. Forest. 38: 889-896, illus.
266. \_\_\_\_\_ and Young, H. E.  
1943. Empirical log rules according to species groups and lumber grades. J. Forest. 41: 511-518, illus.
267. Scribner, J. M.  
1846. The Ready Reckoner; for ship builders, boat builders, and lumber merchants. Ed. 4. Rochester, N.Y.

268. Segur, John A.  
1967. Symposium on financial management. I. Protecting our wood supply. J. Forest. 65: 458-463, illus.
269. Sharpnack, David A.  
1966. Predicting volumes in four Hawaii hardwoods...first multi-variate equations developed. U.S.D.A. Forest Serv. Res. Note PSW-121, 15 pp.
270. Shults, Edward L.  
1967. Automatic scaling called scalers doom. West. Timber Ind. 18(4): 22.
271. \_\_\_\_\_  
1967. Forester hits chip values in appraisals. Forest Ind. 94(3): 40-41.
272. Siegel, W. C.  
1964. Timber by the pound--a growing trend. Pulpwood Prod. 12(12): 22-23, illus.
273. Siegel, William C., and Row, Clark.  
1960. Selling sawlogs by the ton. Forest Farmer 19(13): 8-9, illus.
274. Simard, Henri.  
1966. Regulation of wood measurement practices for the future. Forest. Chron. 42: 14-17.
275. \_\_\_\_\_  
1966. Tree-length scaling: facts or fancies. Pulp & Pap. Mag. Can. Woodlands Rev. Sect. Index 2340(B-6): 1-8, illus.
276. Sloan, Gordon McG.  
1957. Scaling. In Report of the Commissioner relating to the forest resources of British Columbia 1956. V. 2, pp. 529-543. Victoria, B.C.: Don McDiarmid, Printer.
277. Smith, Douglas C. [S.]  
1964. Making the transition from board foot to cubic measure. In Loggers handbook, v. 24, sect. II, 54th sess. Pacific Logging Congr. Proc. 1963: 77-78.
278. Smith, Douglas S.  
1963. Wood raw material measurement practices, problems and recommendations. Loggers Handb. 23: 21-23, illus.
279. \_\_\_\_\_  
1967. Some comments on wood measurement. Loggers Handb. 27: 31-33, 148, illus.
280. Sorensen, Chester J.  
1944. Why are small pulpwood logs left to rot in the woods? Timberman 45(6): 38-39, illus.

281. Sorensen, Chester J.  
1945. Board foot-cubic foot conversion values. Timberman 47(2):  
42-43, illus.
282. \_\_\_\_\_  
1946. The cubic foot - a log unit. West Coast Lumberman 73(6):  
56-57, 112, illus.
283. Sparkhaw, W. N.  
1925. Why is a "cunit?" J. Forest. 23: 848-849.
284. Spelman, Howard R.  
1930. Notes on log scaling and grading practice in the Douglas fir  
region. U.S.D.A. Forest Serv. Office Forest Prod. Rep.,  
80 pp., illus.
285. Spurr, Stephen H.  
1954. Simplified computation of volume and growth. J. Forest. 52:  
914-922, illus.
286. Staebler, George R.  
1953. Long logs or short logs with the Scribner scale. Timberman  
54(10): 66, 68, 70, illus.
287. Stage, A. R.  
1957. Speedy scaling of low-value log-loads. U.S.D.A. Forest Serv.  
Intermountain Forest & Range Exp. Sta. Res. Note 50, 4 pp.,  
illus.
288. Stenzel, George.  
1954. Marketing woodlot products in the State of Washington. Univ.  
Wash. Coll. Forest. Inst. Forest Prod. Bull. 15, 56 pp.,  
illus.
289. Stetson, Irving G.  
1910. A comparison of Maine and Blodgett log rules. Forest. Quart.  
8: 427-432.
290. Taras, M. A.  
1967. Weight scaling: its past--present--future. In Wood Measure-  
ment Conference proceedings, F. Buckingham, ed. Univ.  
Toronto Fac. Forest. Tech. Rep. 7: 143-156.
291. Taras, Michael A.  
1956. Buying pulpwood by weight: as compared with volume measure.  
U.S.D.A. Forest Serv. Southeast. Forest Exp. Sta. Sta. Pap.  
74, 11 pp., illus.
292. Tiemann, H. D.  
1916. A discussion of log rules--their limitation and suggestions  
for correction. Soc. Amer. Forest. Proc. 11: 93-96.
293. Tiemann, Harry D.  
1905. Methods of making discounts for defects in scaling logs.  
Forest. Quart. 3: 354-357.

294. Tiemann, Harry D.  
1910. The log scale in theory and practice. Soc. Amer. Forest.  
Proc. 5: 18-33.
295. Trimble, G. R., Jr.  
1965. Timber by the pound not a desirable trend for hardwood sawlogs.  
J. Forest. 63: 881.
296. Turnbull, K. J., Pienaar, L. V., and Bella, I. E.  
1965. Report on a study of log weight estimation. U.S.D.A. Forest  
Serv. Pacific Northwest Forest & Range Exp. Sta. and Univ.  
Wash. Coll. Forest. 20 pp. plus graphs.
297. Turner, George J.  
1967. Statistical analysis in log allocation. Oper. Res. Meeting  
Oreg. State Univ., May 15-16, 1967. 18 pp.
298. Turney, Harry.  
1959. Planer attachments give new look in chipping. Can. Lumberman  
79(4): 35-37, illus.
299. U.S. Department of Agriculture Library.  
1955-60. Grading of logs and trees for quality. Bibliographies  
compiled for the Forest Service Log Grade Committee;  
A, prior to 1955 (Frances J. Flick, comp.), pp. 1-29;  
B, July 1955-60 (Nellie G. Larsen and Marcia J. Sigler,  
comp.), pp. 1-50.
300. U.S. Forest Products Laboratory.  
1965. Western wood density survey report number 1. U.S.D.A. Forest  
Serv. Res. Pap. FPL-27, 58 pp.
301. U.S.D.A. Forest Service.  
1964. National Forest log scaling handbook FSH 2443.71. 193 pp.  
(Region 6 Suppl., 45 pp.)
302. Van Sickle, Charles C.  
1966. Factors for converting Midsouth pulpwood from cords to cubic  
feet. U.S.D.A. Forest Serv. Res. Note SO-45, 2 pp., illus.
303. Vinnedge, R. W.  
1928. President's address--Nineteenth Pacific Logging Congress.  
Timberman 30(1): 37-38.
304. Wackerman, A. E., Hagenstein, W. D., and Michell, A. S.  
1966. Harvesting timber crops. Ed. 2, 540 pp., illus. New York:  
McGraw-Hill Book Co., Inc.
305. Wagg, J. W. Bruce, and Proctor, Phimister B.  
1949. Evaluation of defective old-growth Douglas fir timber. Oreg  
Forest Prod. Lab. Rev. Progr. Rep. Proj. 34, 40 pp.
306. Wakeley, P. C.  
1927. American forestry and the metric system. J. Forest. 25:  
966-980.

307. Ware, Kenneth D.  
1965. Some problems in the quantification of tree quality. Soc. Amer. Forest. Proc. 1964: 211-217.
308. \_\_\_\_\_  
1966. Measuring tree quality. In Measuring the southern forest, Thomas D. Keister, ed. Louisiana State Univ. 15th Annu. Forest. Symp. Proc., pp. 43-63.
309. Webb, Max C.  
1961. Weight versus stick scaling. South. Lumberman 203(2526): 35-36.
310. Weeks, Carl E.  
1927. Scaling methods in falling and bucking. Timberman 29(1): 68, 70, 72.
311. Whitaker, Meade.  
1967. Symposium on financial management. II. Taxation as a variable cost in the management of forest lands. J. Forest. 65: 463-467.
312. Whittaker, J. E.  
1961. Measurement of wood chips. Pulp & Pap. Mag. Can. 62(5): 149-150.
313. Wiggins, D. L.  
1910. The scaling of logs involves mature judgment and ripened experience. Pacific Logging Congr. Proc., pp. 48-49, illus. (Compiled and issued by The Timberman.)
314. Wood, R. S.  
1964. The use of cubic scale. Loggers Handb. 24: 22, 24, 99.
315. Woodfin, Richard O., Jr., and Mei, Mary Anne.  
1967. Computer program for calculating veneer recovery volume and value. U.S.D.A. Forest Serv. Pacific Northwest Forest and Range Exp. Sta., 39 pp., illus.
316. Worley, David P.  
1963. Calculating optimum product combinations from standing trees. U.S.D.A. Forest Serv. Res. Pap. CS-7, 17 pp., illus.
317. Worrell, Albert C., Lockwood, A. N., and Lauridsen, M. L.  
1963. A general review of U.S. Forest Service timber appraisal policies and procedures. 40 pp. Rep. of the Timber Appraisal Rev. Comm. U.S.D.A. Forest Serv.
318. Worthington, Norman P.  
1949. Lumber grade recovery and milling costs from second growth Douglas fir of central western Washington. Timberman 50(11): 58, 60, 62, 64, 66, illus.

319. Worthington, Norman P. and Twerdal, Melvin P.  
1950. Contents of a cord of eight-foot pulpwood. U.S.D.A. Forest Serv. Pacific Northwest Forest & Range Exp. Sta. Res. Notes 69, 6 pp., illus.
320. Wright, K. H., and Harvey, G. M.  
1967. The deterioration of beetle-killed Douglas-fir in western Oregon and Washington. U.S.D.A. Forest Serv. Res. Pap. PNW-50, 20 pp., illus.
321. Yerkes, Vern P.  
1966. Weight and cubic-foot relationships for Black Hills ponderosa pine saw logs. U.S.D.A. Forest Serv. Res. Note RM-78, 4 pp., illus.
322. \_\_\_\_\_  
1967. Effect of seasonal stem moisture variation and log storage on weight of Black Hills ponderosa pine. U.S.D.A. Forest Serv. Res. Note RM-96, 8 pp., illus.
323. Yoder, Ray.  
1964. Making the transition from board foot to cubic foot measure. In Loggers handbook, v. 24, sect. II, 54th sess. Pacific Logging Congr. Proc. 1963: 70-74.
324. Young, Harold E.  
1966. Forest measurement accuracy. Forest. Chron. 42: 438-443.
325. \_\_\_\_\_, Robbins, Wallace C., and Wilson, Sue.  
1967. Errors in volume determination of primary forest products. XIV IUFRO-Kongress (München) Sect. 25, VI: 546-562, illus.
326. Ziegler, Edwin Allen.  
1909. The standardizing of log measures. Soc. Amer. Forest. Proc. 4: 172-184.
327. Zivnuska, John A.  
1959. Private forestry in Norway--a case study in small woodland management and policy. Forest Sci. Monogr. 1, 49 pp., illus.
328. Zon, Raphael G.  
1903. Factors influencing the volume of solid wood in the cord. Forest. Quart. 1: 126-133.
329. Zumwalt, Eugene V.  
1946. Log scaling in Japan. J. Forest. 44: 526-527.
330. Zycha, H., and Dimitri, L.  
1962. Experience with a device for determination of decay in growing trees. Forstwiss. Centbl. 81(7/8): 222-230.

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